A Review, Analysis, and Restructuring of the Husson Stock Index

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Abstract

The Husson Stock Index (HSI), developed by Marie Kenney under the supervision of Associate Professor J. Douglas Wellington, aims to track the performance of the Maine Economy through the tracking of various publicly traded companies. These companies are either Maine-based or contribute significantly to the economy in Maine through revenue or employment. Since its introduction, numerous companies have been removed from the index, bringing the total down to 23. Additionally, there has not been a major statistical review of the tracking efforts of the index since its creation. This study aims to identify new companies to be added to the index, create a new weighting system that more accurately represents each company's contribution to the state, and conduct a statistical review of past performance in relation to the Maine economy. The addition of four new companies and the reformatting of the index proves to be necessary to further the development of the index. The statistical review has shown that the HSI and other relevant stock indexes are effective in tracking the real GDP growth of the Maine economy. Beyond laying the groundwork for future additions of companies and new weighting methods, we also seek to open a new path towards the creation of a tracker for the real GDP growth of the State.

Background

The original Husson Stock Index (HSI) was created with a price weighting system. In this system, the prices of all included stock tickers are added and then divided by a number which will give the index a reasonable starting position. This value, known as the divisor, which is currently: 1602.787*100, was initially picked to have the stock index start with the price of $100.00. With the addition and removal of companies, the divisor will need to be updated to maintain consistency in price. Some issues have been found with the price weighting approach: There is no methodology to show how each company effects the Maine economy, and many companies that are smaller by market capitalization will have a larger impact on the index because they have a higher stock price.

Sector	GDP (Millions)	Percentage of GDP	Total Sum of Price in HSI 1/2/2026	Total Percentage	Misrepresentation (Actual - Represented (GDP - HSI))
Government	$ 11,427.90	10.73%	0	0.00%	-10.73%
Mining	$ 88.20	0.08%	0	0.00%	-0.08%
Utilities	$ 1,528.80	1.44%	165.31	4.09%	2.65%
Construction	$ 3,701.90	3.47%	0	0.00%	-3.47%
Information	$ 2,016.10	1.89%	408.86	10.11%	8.22%
Manufacturing	$ 8,531.20	8.01%	530.65	13.13%	5.12%
Nondurable Goods	$ 4,031.20	3.78%	77.69	1.92%	-1.86%
Retail Trade	$ 8,944.70	8.40%	705.47	17.45%	9.05%
Education	$ 1,461.90	1.37%	0	0.00%	-1.37%
Durable Goods	$ 4,500.00	4.22%	0	0.00%	-4.22%
Other	$ 2,200.10	2.07%	0	0.00%	-2.07%
Wholesale Trade	$ 4,630.30	4.35%	0	0.00%	-4.35%
Transportation / Warehousing	$ 1,939.00	1.82%	101.02	2.50%	0.68%
Finance and Insurance	$ 6,717.20	6.31%	431.25	10.67%	4.36%
Arts, Entertainment, Recreation	$ 1,161.20	1.09%	14.85	0.37%	-0.72%
Adminsitration	$ 2,768.00	2.60%	0	0.00%	-2.60%
Accomodation and Food Services	$ 4,911.90	4.61%	783.45	19.38%	14.77%
Professional and Technology	$ 6,336.10	5.95%	824.3	20.39%	14.44%
Management	$ 2,757.30	2.59%	0	0.00%	-2.59%
Healthcare	$ 10,828.50	10.16%	0	0.00%	-10.16%
Real Estate	$ 16,051.60	15.07%	0	0.00%	-15.07%
Total	$ 106,533.10	100.00%	4042.85	100.00%	

Methods

The adjusted market capitalization weighting seeks to address both issues at the same time. By using the market cap of companies, we can base the effect on the index by the value of companies, rather than the stock ticker price, which is arbitrary in calculating value. By adjusting the market cap values, we can use a measure to interact with the values until they better reflect the companies' contribution to the economy. The measure chosen was the percentage of revenue earned in Maine compared to total revenue of the companies. This method gives significant weight to those companies which conduct their business in Maine and reduces weight of companies that might not contribute significantly. The adjusted market cap weighting is shown in the following formula:

$$[R(i)/R(t)]*MC(t) = MC(i)$$

Many publicly traded corporations do not give breakdowns on revenue by state, so this revenue must be estimated. The primary method used was dividing the total revenue by the number of locations a corporation might have and then comparing the divided number to the number of locations in Maine. These locations differed in size and purpose, for example, McDonalds and Darden Restaurants were both calculated using the number of restaurants operated in the state. For manufacturing and technology companies, the total number of production facilities was used. For banks, the total revenue was multiplied by 0.3%, which is the contribution of Maine to the U.S. GDP. For other companies, specific uses were found, such as value of contracts for General Dynamics, acreage for Weyerhaeuser, or direct value of subsidiary companies for Colgate and Proctor & Gamble.

The widespread collection of historical data for this project used data from Yahoo Finance, collecting these datapoints manually would have taken an exceptional amount of time. As a result, a code was developed with the assistance of Google Gemini's new Colab function. The values from this code were later checked at random and found to be consistent and satisfactory.

Primary Findings

The old HSI contained outdated companies: Charter Communications and Valero Energy Corporation. These companies either reduced their presence in Maine or never had a significant presence in the first place. Additionally, some companies were added to represent certain industries. Weyerhaeuser was added to show the health of the logging industry, Proctor & Gamble for consumer staples, Texas Instruments for manufacturing, and Tyler Technologies for information technology.

Stock	Ticker Symbol	Stock Exchange
Bank of America Corporation	BAC	NYSE
Bar Harbor Bankshares	BHB	NYSE
Camden National Corporation	CAC	NASDAQ
Charter Communications, Inc.	CHTR	NASDAQ
Colgate-Palmolive Company	CL	NYSE
Darden Restaurants, Inc.	DRI	NYSE
The First Bancorp, Inc.	FNLC	NASDAQ
General Dynamics Corporation	GD	NYSE
Hilton Worldwide Holdings Inc.	HLT	NYSE
The Home Depot Inc.	HD	NYSE
ImmuCell Coporation	ICCC	NASDAQ
IDEXX Laboratories, Inc.	IDXX	NASDAQ
Lowe's Companies, Inc.	LOW	NYSE
McDonald's Corporation	MCD	NYSE
Northeast Bank	NBN	NASDAQ
PENN Entertainment, Inc.	PENN	NASDAQ
Raytheon Technologies Corporation	RTX	NYSE
The Toronto-Dominion Bank	TD	NYSE
T-Mobile US, Inc	TMUS	NASDAQ
United Parcel Service, Inc	UPS	NYSE
Unum Group	UNM	NYSE
Valero Energy Corporation	VLO	NYSE
Walmart Inc.	WMT	NYSE
WEX Inc.	WEX	NYSE

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The First Bancorp, Inc.	FNLC	NASDAQ
General Dynamics Corporation	GD	NYSE
Hilton Worldwide Holdings Inc.	HLT	NYSE
The Home Depot Inc.	HD	NYSE
ImmuCell Coporation	ICCC	NASDAQ
IDEXX Laboratories, Inc.	IDXX	NASDAQ
Lowe's Companies, Inc.	LOW	NYSE
McDonald's Corporation	MCD	NYSE
Northeast Bank	NBN	NASDAQ
PENN Entertainment, Inc.	PENN	NASDAQ
Proctor & Gamble Corpoation	PG	NYSE
Raytheon Technologies Corporation	RTX	NYSE
Texas Instruments Corporation	TXN	NASDAQ
The Toronto-Dominion Bank	TD	NYSE
T-Mobile US, Inc	TMUS	NASDAQ
Tyler Technologies, Inc	TYL	NYSE
United Parcel Service, Inc	UPS	NYSE
Unum Group	UNM	NYSE
Walmart Inc.	WMT	NYSE
WEX Inc.	WEX	NYSE
Weyerhaeuser Corporation	WY	NYSE

A quarterly historical review of the HSI was conducted and highlighted a significant relationship between the GDP growth of Maine and the value of the index in real time. The S&P500 and Dow Jones Industrial Average (DJIA) also had a significant relationship, but with higher p-values and lower r-square values. None of the three indexes had any significance in predicting the next quarter of GDP growth. The new version of the HSI highlighted no significant relationship with predicting the current GDP Growth, but did show a significant lagged relationship, which we understand as a fundamental way stocks interact with GDP growth. It is believed that stock performance for Q1 will highlight the change in GDP growth in Q2. As a result, the new HSI shows promising potential in predicting future GDP values.

Regression Results					
On Time (Nowcast)			Predicted Values		
Index	P-Value	R Square	Index	P-Value	R Square
HSI	2.19128E-06	0.3956	New HSI	0.000386572	0.1482
S&P500	0.000185586	0.1611	HSI	0.189739946	0.0387
DJIA	0.00023423	0.1565	S&P500	0.265640952	0.0156
			DJIA	0.178960091	0.0227

For the above regression results, data was taken quarterly since 2005, which resulted in 81 usable data points for each index above. These datapoints were then compared with the respective 81 datapoints for state GDP growth from the BEA. The predicted values mentioned above represent the ability of the index to give leading results, for example, Q4 2025 data from an index would be representative of Q1 2026 GDP data.

The new HSI is comprised of both the price weighting and adjusted market capitalization versions of the index. This way, the performance of each index can be tracked against each other as well as the S&P500 and DJIA. It is our hope that this format will keep both versions of the index up to date, with the old HSI being used to show results reflected in the weekly reports written by students, and the new HSI being used as a launchpad for future GDP tracking research.

Stock	In-State Revenue (Millions)	Total Revenue (Millions)	% of Revenue in Maine	Market Cap (Millions)	Market Cap in Maine (K*L)	Maine Market Cap (Start of Year) [Millions]	Maine Market Cap (Previous Week) [Millions]	Maine Market Cap (Current) [Millions]
Bank of America Corporation	$ 298.30	$ 101,900.00	0.293%	$ 352,841.56	$ 1,032.90	$ 1,170.37	$ 1,017.46	$ 977.30
Bar Harbor Bankshares	$ 110.00	$ 110.00	100.000%	$ 551.65	$ 551.65	$ 522.69	$ 529.05	$ 521.85
Camden National Corporation	$ 230.00	$ 230.00	100.000%	$ 816.31	$ 816.31	$ 728.30	$ 777.21	$ 769.76
Colgate-Palmolive Company	$ 30.50	$ 20,100.00	0.152%	$ 68,071.31	$ 103.29	$ 94.58	$ 113.90	$ 108.16
Darden Restaurants, Inc.	$ 30.69	$ 11,400.00	0.269%	$ 22,529.30	$ 60.65	$ 57.72	$ 62.65	$ 62.40
The First Bancorp, Inc.	$ 80.00	$ 80.00	100.000%	$ 318.72	$ 318.72	$ 297.76	$ 312.53	$ 308.36
General Dynamics Corporation	$ 2,611.00	$ 42,300.00	6.173%	$ 94,506.25	$ 5,833.47	$ 5,741.02	$ 6,076.89	$ 5,876.77
Hilton Worldwide Holdings Inc.	$ 31.38	$ 11,200.00	0.280%	$ 70,776.51	$ 198.30	$ 188.22	$ 191.85	$ 187.30
The Home Depot Inc.	$ 798.57	$ 157,400.00	0.507%	$ 319,022.47	$ 1,618.56	$ 1,747.52	$ 1,808.67	$ 1,713.21
ImmuCell Coporation	$ 113.00	$ 113.00	100.000%	$ 57.90	$ 57.90	$ 53.56	$ 59.71	$ 57.63
IDEXX Laboratories, Inc.	$ 3,900.00	$ 3,900.00	100.000%	$ 44,681.42	$ 44,681.42	$ 53,213.65	$ 48,322.68	$ 45,575.39
Lowe's Companies, Inc	$ 586.38	$ 86,400.00	0.679%	$ 128,853.36	$ 874.50	$ 938.44	$ 957.44	$ 903.09
McDonald's Corporation	$ 164.70	$ 26,500.00	0.622%	$ 217,849.15	$ 1,353.95	$ 1,342.26	$ 1,452.03	$ 1,444.95
Northeast Bank	$ 200.00	$ 200.00	100.000%	$ 985.08	$ 985.08	$ 880.00	$ 908.07	$ 933.99
PENN Entertainment, Inc.	$ 72.00	$ 6,700.00	1.075%	$ 1,937.76	$ 20.82	$ 21.30	$ 20.99	$ 20.52
Proctor & Gamble Corpoation	$ 469.10	$ 82,000.00	0.572%	$ 334,888.96	$ 1,915.81	$ 1,902.65	$ 2,042.51	$ 2,002.89
Raytheon Technologies Corporation	$ 124.63	$ 80,700.00	0.154%	$ 263,164.90	$ 406.42	$ 389.23	$ 436.02	$ 425.13
Texas Instruments Corporation	$ 1,178.67	$ 17,500.00	6.735%	$ 176,365.86	$ 11,878.69	$ 10,729.52	$ 11,849.26	$ 11,699.02
The Toronto-Dominion Bank	$ 74.20	$ 55,000.00	0.135%	$ 158,859.97	$ 214.32	$ 212.85	$ 215.21	$ 209.92
T-Mobile US, Inc	$ 264.93	$ 80,000.00	0.331%	$ 226,827.55	$ 751.17	$ 728.26	$ 808.50	$ 793.25
Tyler Technologies, Inc	$ 163.51	$ 5,400.00	3.028%	$ 14,453.61	$ 437.65	$ 579.28	$ 481.53	$ 449.65
United Parcel Service, Inc	$ 178.56	$ 91,000.00	0.196%	$ 83,038.54	$ 162.94	$ 147.80	$ 149.76	$ 142.23
Unum Group	$ 353.51	$ 12,000.00	2.946%	$ 12,359.09	$ 364.09	$ 372.56	$ 354.66	$ 348.10
Walmart Inc.	$ 1,591.12	$ 681,000.00	0.234%	$ 1,001,732.44	$ 2,340.50	$ 2,100.39	$ 2,306.04	$ 2,356.70
WEX Inc.	$ 10,600.00	$ 10,600.00	100.000%	$ 5,314.54	$ 5,314.54	$ 5,091.35	$ 5,732.27	$ 5,487.98
Weyerhaeuser Corporation	$ 32.09	$ 7,700.00	0.417%	$ 17,502.50	$ 72.94	$ 71.27	$ 73.58	$ 70.46
S&P 500 (Not included in HSI)								
Dow Jones (Not included in HIS)								
Husson Stock Index	$ 24,286.84				$ 82,366.62	$ 89,322.55	$ 87,060.48	$ 83,446.00

Conclusion

The review of the HSI brought up necessary removals and additions to the index, those which will better align with the index with the economy of the state. At the same time, the historical review and analysis of the index was paramount in showing the effectiveness the index has on tracking the economic health of the state through GDP growth as well as its advantage over larger indexes like the S&P500 and the (DJIA). The original HSI will not be replaced as a result of the study, instead, both indexes will continue to be tracked alongside each other. With the research and formation of the new HSI creating a base for the development of a new economic prediction and tracking index at Husson University.

Research Opportunities

A potential next step for this study would be to find more effective means to predict the economic growth of Maine as publicly traded companies consist of a small portion of the economy. Municipal bonds, government growth rates, and private sector values could be used to continue to track and predict the health of the economy.

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